DOCUMENT RESUME

ED 153 048 08 CE 015 754

AUTHOR Schwartz, Stuart E.
TITLE Architectural Considerations for a Barrier Free Environment.
INSTITUTION Florida Univ., Gainesville. Coll. of Education.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
BUREAU NO 498AH60166
PUB DATE [77]
GRANT G007604050
NOTE 24p.; Photographs throughout booklet may not reproduce well; For related documents see CE 015 749-753

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Architectural Barriers; Architectural Elements; *Building Design; Changing Attitudes; *Educational Facilities; Educational Legislation; Educational Strategies; *Handicapped Students; Mainstreaming; Normalization (Handicapped); Program Development; Secondary Education; *Vocational Education
IDENTIFIERS Florida

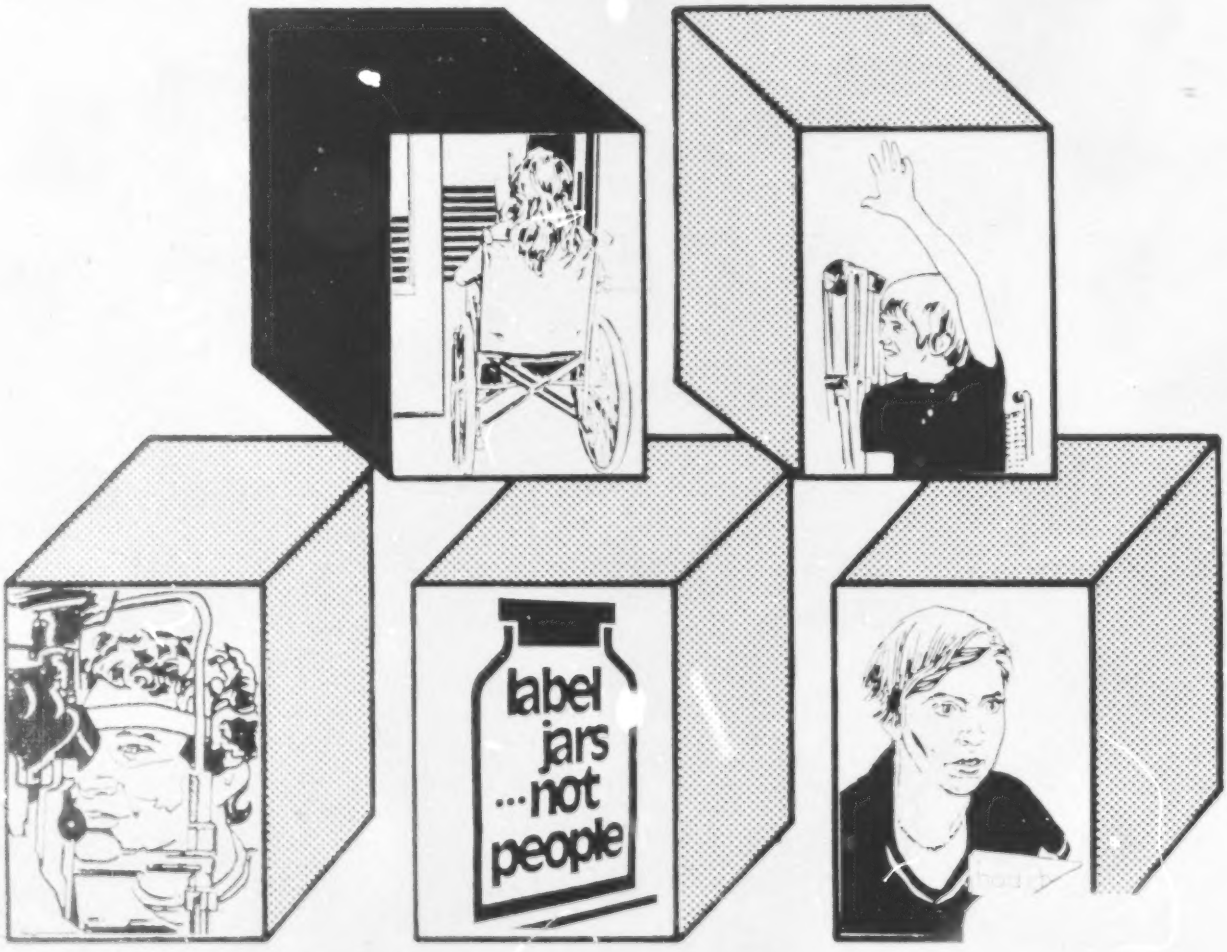
ABSTRACT

One of five booklets designed to help vocational education teachers and administrators relate more effectively to handicapped students in their classrooms, this booklet suggests that the experience available to a normal student in a vocational education class is equally enriching to one who is handicapped if architectural changes are made to accommodate special needs. Critical factors to consider in transforming buildings and classrooms to make them accessible to students with a handicapping condition are included in discussions of provisions for non-ambulatory students, provisions for semi-ambulatory students, provisions for the visually impaired student, and provisions for hearing impaired students. A checklist to determine how well a school measures up to the standards set by law to help the handicapped learner is included. A self-test is provided for pre- and posttest evaluation. (TA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Architectural Considerations for a Barrier Free Environment

ED153048



Another Step Forward...

These booklets were designed to help vocational education teachers and administrators relate more effectively to handicapped students in their classrooms. They were produced as a special project at the University of Florida. These booklets should provide you with valuable information and answer questions you may have about handling the special needs of handicapped students. For additional information, please write: Dr. Stuart E. Schwartz

University of Florida
Special Education Department
43 Norman Hall
Gainesville, Florida 32611

The series of five booklets covers material on a wide-range of aspects dealing with handicapped individuals. The booklets include:

1) Mainstreaming Handicapped Students into the Regular Classroom
2) Characteristics of Handicapped Students
3) Evaluation and Placement
4) A System of Management
5) Architectural Considerations for a Barrier Free Environment

Principal Investigator. . . . . Stuart E. Schwartz, Ed.D.
Project Director. . . . . Robert E. Fowler, Ed.D.
Senior Project Advisor. . . . . James W. Hensel, Ph.D.
Project Advisor . . . . . .Cary L. Reichard, Ed.D.
Editorial and Production Director. . . . . Catharine L. Rogers

Graduate Research Assistants

Marilyn Bartnick . . . . . Carolyn Bockhaut
Joel Corley . . . . . Lynn Erb
James Heaney . . . . . Jo Ellen LaVeigne
Carol Knoblick . . . . . Milton McGrath
Terry L. Rose . . . . . Virginia Rosenblum
James Siders

Steering Committee Members

Dr. Ralph Cline . . . . . Dr. Fred Gainous
Mr. Pat Gardner. . . . . Dr. Robert Lathrop
Mr. Wayne LeRoy . . . . . .Mr. Charles McFarland
Mr. Dan McKinnon . . . . . Dr. Jeanice Midgett
Dr. Dominic A. Mohamed . . . . . Mr. Thomas C. Swift
Dr. Bill Wargo . . . . . Ms. Kathy Wyatt

Secretarial Assistants

Leila Cantara. . . . . .Patti McGlave

Student Assistants

Laurie Dedman . . . . . .Carl Jass

Graphics

Joe Marianno. . . . . .Learning Resources Center
J. Hillis Miller Health Center

Photography

Curtis Darrah. . . . . .Learning Resources Center
J. Hillis Miller Health Center
Brian Grigsby . . . . . .Gainesville Sun

Here are a few questions to help determine what you already know about teaching handicapped students in your classes.

After reading this booklet, take the test again to evaluate your understanding of the important concepts. The correct answers are given in the back of the booklet.

Indicate whether the following statements are true or false.

_____ 1. The primary aim of vocational education for the handicapped individual is to develop special facilities and programming separate from regular programming.

_____ 2. Building accessibility requires modification of existing facilities so handicapped people can move around without assistance.

_____ 3. A building is accessible to sight disabled people if identification of rooms is done with raised lettering mounted on the wall 4½ to 5½ feet high with room number and function labeled.

_____ 4. Classroom considerations for handicapped students differ as little as possible from normal planning regarding equipment and approach.

_____ 5. Extra safety measures must be installed for handicapped students to the extent they are over protected.

_____ 6. An architectural barrier is any condition that restricts the ability of a person with a functional limitation to use the building.

_____ 7. There is no need to provide parking spaces for handicapped people because they are unable to drive.

_____ 8. Elevators should provide access to all floors of the school building.

_____ 9. If only a few students in your school are handicapped it isn't necessary to make any modifications of the environment.

_____ 10. An accessible building is one that any person with a handicap can use.

Architectural barriers are a difficult problem for handicapped people to cope with in the fast-paced, complex world we live in today. They encounter needless frustration trying to function with a handicap in our thoughtlessly constructed environment. Individuals without handicaps often have trouble moving around in crowded, poorly labeled buildings; but the situation is far worse for people in wheelchairs or with visual and hearing impairments. Picture yourself as an intelligent student restricted from classes and activities at the local school due to a handicap that confines you to a wheelchair. It is not the handicap itself that is limiting, but the architectural structure of the building that makes things inaccessible. If the mechanics lab is on the second floor and can be reached only by stairs, then you are closed out of a chance to an equal education with your classmates. Say you were a visually impaired student who needs tape recordings to explain what is presented in class. If the local school has no provisions for special needs like yours, you will be unable to learn to your greatest capacity. The frustration and sense of uselessness is often more of a disadvantage than the handicap itself.

If everyone had to get along for a few hours in a wheelchair, on crutches, or with their eyes covered; they might be more considerate of the needs of handicapped people. Something must be done about the serious problem of architectural barriers in school buildings and classrooms as we prepare for more handicapped students to enter regular education programs.

New laws and increased public awareness have caused teachers and administrators to look closely at the problem of physical accommodations for handicapped students in their schools. What they have found is not encouraging about provisions to help handicapped students function in the school environment. The valuable experience available to a normal student in a vocational education class is equally enriching to one who is handicapped if architectural changes are made to accommodate special needs.

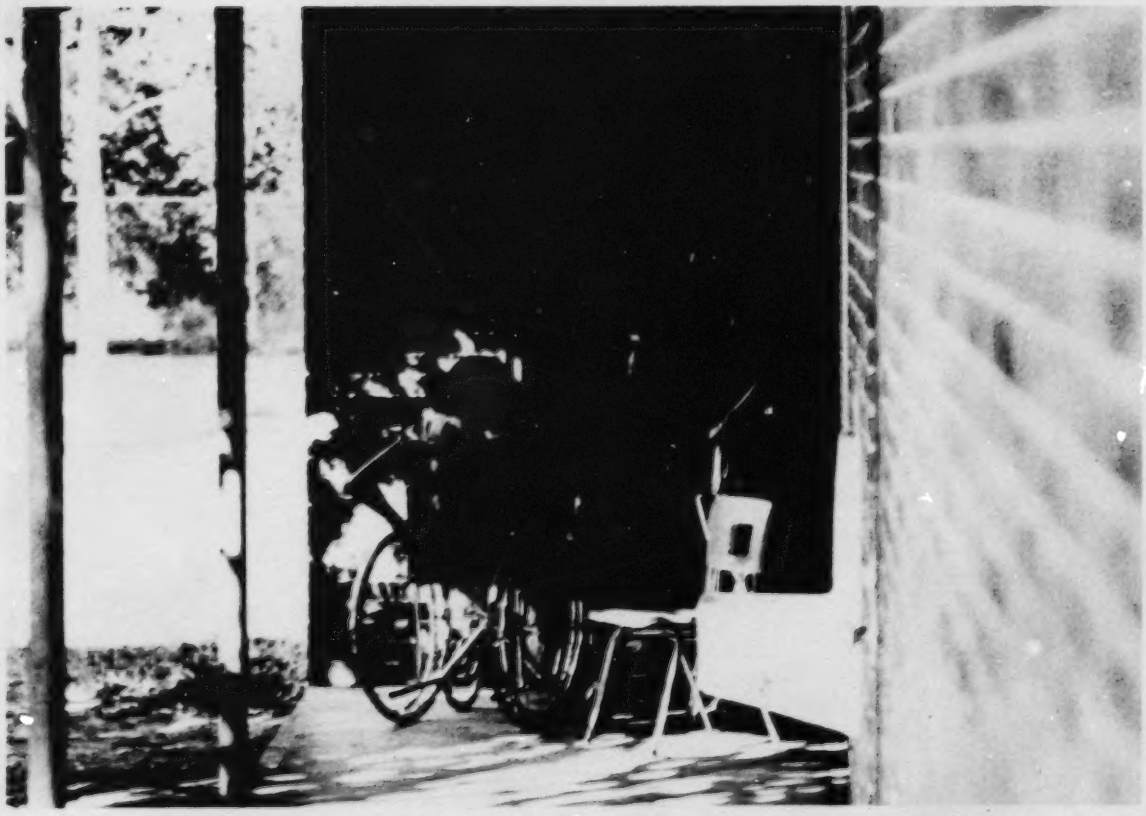
A number of federal laws guide the construction of facilities to meet the regulations guaranteed to handicapped people. Most notable is the Architectural Barriers Act of 1968, PL 90-480, which identifies and suggests ways of

improving accessability in federally funded buildings. In 1973, the Rehabilitation Act extended this issue further. The Rehabilitation Act is an all encompassing piece of legislation that provides for changing the environment to meet handicapped people's needs in many kinds of facilities, of which schools are one.

The education of handicapped students should be a planned process, rather than one of incidental services. Therefore, vocational education cooperates with other health, rehabilitative, and educational agencies to provide services that will enable the handicapped person to receive an education and be employed. To do this, the handicapped student must be able to use the buildings and classrooms.

Existing facilities should be changed to meet the special instructional and personal requirements of handicapped individuals. The people in charge of constructing school buildings must consider the **"accessibility"** and **"usability"** of the facilities by handicapped people and plan accordingly.

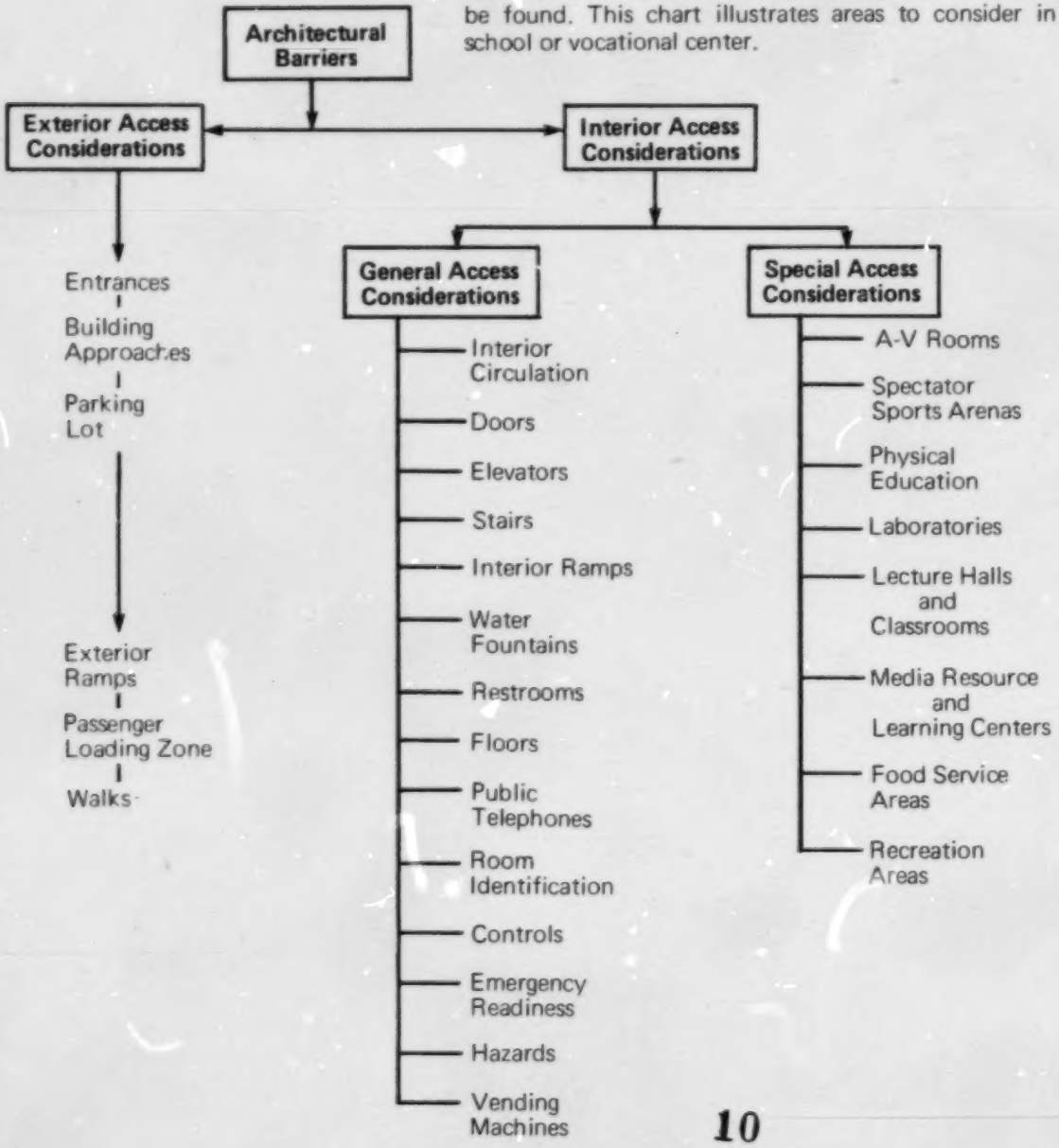
The presence of an architectural barrier is a major reason that handicapped students cannot participate in vocational education. An architectural barrier is any condition that restricts the ability of a person with a functional limitation



to use the building. If the only way to reach the machine shop is down a flight of stairs, a person in a wheelchair faces a great architectural barrier to get to the classroom.

The objective in planning facilities to eliminate architectural barriers is to make them accessible. Accessibility means that any person with a handicap can use the building. A building which is accessible can be used by everybody; allowing them to enter, leave, and circulate without assistance.

Architectural barriers exist in every area of a building. A facility can be divided into sections of exterior and interior access to locate areas where architectural barriers are likely to be found. This chart illustrates areas to consider in your school or vocational center.



A walk around the outside and through the interior of any building reveals problems of accessibility that have been neglected in providing for the needs of the handicapped student. Each handicap has special limitations that must be considered. The problems of a blind student are much different from those of one confined to a wheelchair, so the environment must be modified for each.

Although only a small percentage of the total student body is handicapped, the architectural barriers in some buildings present insurmountable obstacles to overcome. Modifications to remove these barriers should be a vital concern of teachers and administrators.

Here are critical factors to consider in transforming buildings and classrooms to make them accessible to students with a handicapping condition. You will see the degree of the problem of inaccessibility when you compare the needs of the handicapped students with what is provided for them at the present time.

Provisions for Non-ambulatory Students

Non-ambulatory individuals are confined to wheelchairs. These provisions should be made so they can function in the school environment.

1. Five percent of the parking space reserved for handicapped people. Parking spaces need to be twelve feet wide.
2. Accessible building entrances available. Entrances with revolving doors or steps are impossible for wheelchair bound people to use. Also, the greatest pressure needed to open door should be less than eight pounds.
3. Accessible restrooms available.
4. An elevator that services all floors of the building. Elevator control panels should be less than four feet from the floor.
5. Water fountains that are low enough to be used from a wheelchair.
6. Classrooms must be accessible. Libraries, media centers, cafeterias, and laboratories must be designed so people in wheelchairs can use them.
7. Emergency exits need to be accessible with evacuation procedures that take into account people in wheelchairs.
8. Public telephones modified so people in wheelchairs can use them.

Provisions for Semi-ambulatory Students

Special considerations also need to be made for the semi-ambulatory individual. These people walk with difficulty and rely on braces or crutches to get around. This group contains persons with amputations, arthritis, spasticity, or people with pulmonary or cardiac problems. These modifications will make it easier for them to get along in the regular classroom and school setting:

1. All floors of the building must be accessible by elevator.
2. Steps should be kept to a minimum. Ramps can be installed to make movement easier.
3. Any steps should have rounded edges with hand rails 32 inches high on both sides of the stairway.
4. Grab bars in toilet stalls.
5. A sufficient number of accessible emergency exits with emergency evacuation procedures that provide for handicapped people.
6. Floors covered in a surface that prevents slipping.
7. Hallways and stairs that have good lighting.

Provisions for the Visually Impaired Student

This group includes individuals who are totally blind or have impaired sight to the extent that getting around in public areas is insecure and hazardous for them. Special provisions like these should be made for them:

1. Identification of labs, classrooms, and special purpose rooms in a manner that is easy to read. The room's function and number should be labeled with raised numbers and letters at a height of 54 to 66 inches on the wall. Every room should be made as easy as possible to identify. The best way to label is like this, "Room 571—Machine Shop."
2. Doors to dangerous areas should be locked.
3. Electrical outlets should be available in each classroom or lab for plugging in tape recorders.
4. Sufficient emergency exits and emergency evacuation procedures should be considered for those with impaired vision.
5. Facilities available for seeing eye dogs.

Provisions for Hearing Impaired Students

These individuals are deaf or have a hearing problem that makes them insecure in public areas or industrial situations because they are unable to communicate effectively or hear warning signals. They will succeed in a school environment if these things are done:

1. Install visual emergency warning signals to alarm individuals with hearing problems.
2. Electrical outlets should be available for tape recorders at appropriate places in each classroom or lab.
3. Seat hearing impaired students directly in front of the teacher to aid in lip reading.
4. Install public telephones with adjustable volume controls.
5. Have a sufficient number of emergency exits available with evacuation procedures for the hearing impaired.

Here is a checklist to determine how well your school measures up to the standards to help the handicapped learner.

Exit Only
Please use
side door

How Does Your School Rate?

1. **Parking Spaces.** Usually parking spaces are too narrow. Those reserved for handicapped people should be twelve feet wide.

2. **Elevators.** Elevators should provide access to all floors. The top of the control panel should be not more than 54 inches high.

3. **Water Fountains.** Water fountains should be in accessible areas less than 36 inches from the floor.

4. **Rest Rooms.** Toilet stalls should be no less than 36 inches wide by 72 inches deep. To accommodate a wheelchair, the underside of the sink should be 29 inches from the floor, and no higher than 33 inches. Mirrors and dispensers should be mounted about 40 inches high.

5. **Telephones.** The height of the coin slot on the phone should be 54 inches high.

6. **Identification.** The labels for classrooms and labs are commonly mounted on doors, which is hazardous to blind people. Classrooms should be identified by raised numbers and letters mounted on a wall by the door, 54 to 66 inches high. Signs should indicate the room's purpose as well, for instance, "Room 24—Cosmetology Lab."

7. **Exits.** A number of accessible exits in case of emergency should be provided. Two or more accessible exits on each side of the building or opposite ends of the building must be available.

If a building has many architectural barriers and is inaccessible for handicapped individuals, information on how to change the physical environment of the building should be reviewed. There are established standards for a barrier free environment that can be obtained from these sources:

"Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped" produced by the American National Standards Institute, 1430 Broadway, New York, New York 10018

"Making Facilities Accessible to the Physically Handicapped" produced by the New York State Construction Fund, 194 Washington Avenue, Albany, New York 12210

Excerpts from "The Occupational Safety and Health Act", Volume 39, Number 125, Part II, available from the United States Department of Labor, Washington, D.C. 20212

"Making Colleges and Universities Accessible to Handicapped Students", produced by the President's Committee on the Employment of the Handicapped, Washington, D.C.

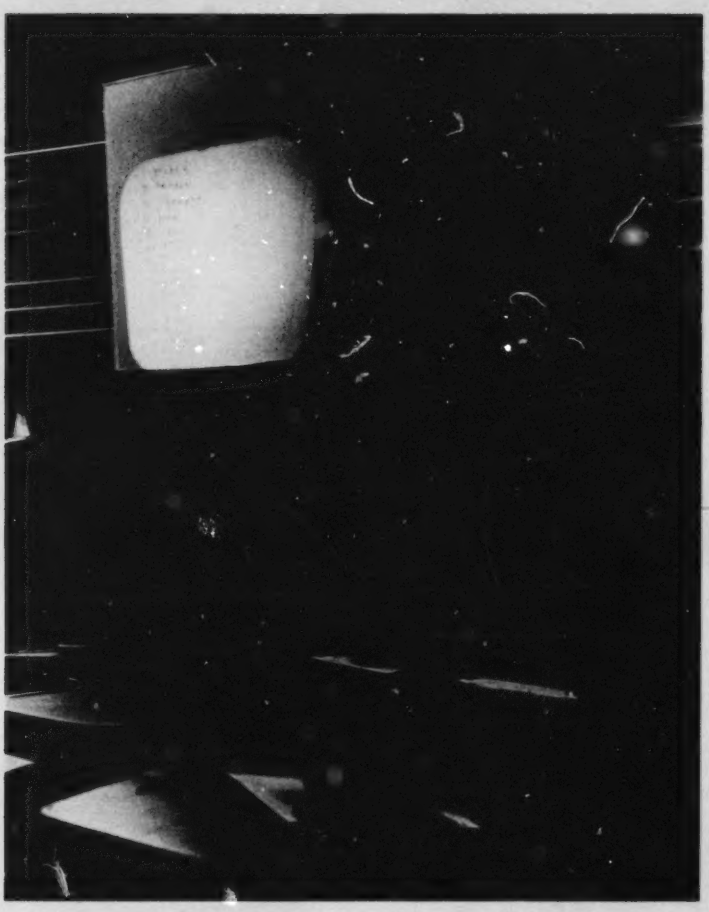
Keep changes to a minimum in modifying the classroom. The classroom structures should remain as normal as possible, yet meet the extra needs of the handicapped students. If training is to be useful, it must be realistic.

To make the physical setting of the classroom more adaptable to the handicapped learner, consider these things:

1. Treat all floor surfaces with a non-skid finish.
2. No gratings should be on the classroom floor that make walking or movement in a wheelchair difficult.
3. One percent of the classroom student stations should be equipped for handicapped students.
4. Classroom desks should have a minimum height of 30 inches from the floor so wheelchairs can fit under them.
5. Windows should be designed so they can be opened by someone in a wheelchair.
6. Student stations for wheelchair bound students must be level.
7. Lip readers should be seated in the front of the classroom.

8. An audio station with earphones should be available for the hearing impaired.

Teaching alterations allow handicapped students to participate in the regular classroom. Technology has developed innovative educational programs and teaching aids that open the door for many handicapped students. Homebound or hospitalized students can participate in classroom activities by using a phone-to-school telephone service provided by most local telephone companies. The student can keep in personal contact with teachers and classmates and will feel more comfortable in the classroom when he returns.



For the visually handicapped student, special materials in large type are available. Several agencies provide useful information and books in large type.

Deaf and hard-of-hearing students in your classes may rely on hearing aids. Hearing aids don't compensate for any particular sounds a hearing impaired individual misses and are not selective about sounds they amplify. If a student is in a lab with loud machinery, he may need to reduce the amplification level of the hearing aid causing him to lose some of the sounds of normal speech. Special adaptations will need to be made to help the student hear what is being said.

For all students with a hearing loss, the teacher should use as much visual material as possible. They may require additional use of the overhead projector, slides, charts, graphs, and the chalkboard. The hearing impaired student should be seated in the front of the room or at a station directly in front of the instructor. This gives students with lip reading skills the best opportunity to visually interpret what the teacher is saying. Many deaf students are trained in manual communication and use the services of an interpreter. The

interpreter generally accompanies the student through the school day.

Information concerning the hearing impaired in the classroom can be obtained from:

American Printing House for the Blind, Inc., 1839 Frankfort Ave., Louisville, Ky. 40601

Florida Instructional Materials Center for the Visually Handicapped, 707 E. Columbus Drive, Tampa, Fla. 33602

Jewish Braille Institute of America, Inc., 110 E. 30th Street, New York, New York 11102

Library of Congress, Division for the Blind, Washington, D.C. 20542

National Aid to Visually Handicapped, 3201 Balboa Street, San Francisco, Cal. 94105

Alexander Graham Bell Association for the Deaf, Inc., 1537 35th Street, N.W., Washington, D.C. 20007

American Speech and Hearing Association, 10801 Rockville Pike, Rockville, Md. 20852

The Convention of American Instructors of the Deaf, 5034 Wisconsin Avenue, N.W., Washington, D.C. 20016

Council on Education of the Deaf, Clarke School for the Deaf, Northampton, Mass. 01060

National Association of the Deaf, 814 Thayer Avenue, Silver Springs, Md. 20910

There are endless teaching techniques and modifications to be used by vocational educators of handicapped students. The optimal learning situation is one adapted to the needs of an individual student. The best teaching methods provide education closely resembling the regular vocational preparation of students who are not handicapped.

Safety is another concern of the vocational education teacher when talking about classroom modifications. Because of technical equipment and special tools, the vocational teacher should make all necessary safety precautions in the classroom. However, equipping the lab or classroom with safety features doesn't need to be overdone just because handicapped students are in the classroom. Over-protection has often held handicapped learners back and kept them from achieving to their fullest. The teacher should keep a relative degree of normalcy in equipment modification to insure safety if the tools are used properly and for the correct purpose. Providing a safety shield on a piece of machinery is a standard procedure carried over from the industrial world where the student will eventually be employed. It is not an unnecessary precaution, but a sensible practice that is used in industry.

If handicapped students are to succeed in the regular classroom or working situation, changes must be made in building and classroom designs to accommodate them. Being

denied attendance at school because of a poorly designed, inaccessible environment is not fair to these people.

Handicapped students are generally as intelligent as any others and deserve every chance to overcome their limitations. A physical environment that restricts them from progressing as far as they can is a waste of human resources. A little thought can transform an environment that restricts a handicapped person into one that is barrier free.

As a teacher it is one of your responsibilities to offer the best education you can to your students. Making the classroom barrier free is one step towards doing this. Children with the ability to learn should not be kept out because they can't reach the room or use certain materials due to their handicap. Discrimination against handicapped people by keeping them out of buildings and educational activities is as wrong as any other kind of prejudice. Lack of understanding and a slow initiative for change on the part of many is perhaps the greatest obstacle facing handicapped people. It is everyone's responsibility to see that changes are made. Start in your school or classroom by locating inaccessible areas and correcting them. If each one of us works to make the environment usable for handicapped people, they will be able to take responsible, independent roles in society.

Bibliography

Cerf-beare, A. Environmental design and architectural barriers: An ergonomic approach. ***Man-Environment Systems***, 1975, 5, 49-57.

Collings, G. D. Barrier-free access. ***Journal of the American Physical Therapy Association***, 1976, **56**, 1029-1933.

Doran, B. Into the mainstream. ***Nation's Schools and Colleges***, 1975, 2, 33-40.

Enabling the disabled. ***American School and University***, 1976, **49**, 62-65.

Entrances: A big problem for handicapped students. ***American School and University***, 1975, **48**, 23-26.

Gardner, J. C. Help eliminate architectural barriers. ***American School and University***, 1974, 47, 34-36.

McGaughey, R. From problem to solution: The new focus in fighting environmental barriers for the handicapped. ***Rehabilitation Literature***, 1976, **37**, 10-12.

Morgan, M. Beyond disability: A broader definition of architectural barriers. ***American Institute of Architects Journal***, 1976, **65**, 50-53.

Peterson, R. M., & Cleveland, J. O. (Eds.). ***Medical problems in the classroom.*** Springfield, Illinois: Charles C. Thomas, 1975.

Tindall, L. W. Breaking down barriers for disabled learners. ***American Vocational Journal***, 1975, 50(8), 45-49.

Younie, W. J., & Rusalem, H. ***The world of rehabilitation.*** New York: John Day, 1971.

The project reported herein was conducted pursuant to Grant No. 6007604050. Project No. 498AH60166 from the U.S. Office of Education, Department of Vocational Education. The views and opinions expressed herein do not necessarily reflect the official position of the U.S. Office of Education, and no endorsement should be inferred.

Answers: 1) F 2) T 3) T 4) T 5) F 6) T 7) F 8) T 9) F 10) T

This public document was promulgated at a cost of $.82 per copy to provide information for vocational education teachers dealing with handicapped students.